UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,586	06/01/2001	Kevin Alexander Stoodley	CA920000035US1	2632

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EXAMINER
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ART UNIT	PAPER NUMBER
2192	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/872,586	STOODLEY, KEVIN ALEXANDER
	Examiner	Art Unit
	Hoang-Vu A. Nguyen-Ba	2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 April 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-18 and 26-30* is/are allowed.

6)☒ Claim(s) *19-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   In view of the Appeal Brief filed on February 25, 2005, PROSECUTION IS

HEREBY REOPENED. New grounds of rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the

following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply

under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied

by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130,

1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

2.   Claims 1-30 are now pending.

Response to Arguments

3.   Applicant's arguments presented in the Appeal Brief with respect to Claims 1-

30 have been fully considered. The rejection of these claims under 35 U.S.C. § 103(a)

as being unpatentable over Holzle in view of Bacon is withdrawn because Bacon and

the instant application are subject to an obligation of assignment to the same assignee

at the time the invention was made.

Examiner notes that Applicant has only argued that Bacon is being disqualified

under 35 U.S.C. § 103(c) as prior art of record. However, Applicant's Appeal Brief

has not specifically argued why Holzle does not teach or suggest the features recited

in Claims 20 and 21. Should the Examiner interpret this to mean that Applicant tacitly

admits that Holzle does teach all the limitations except the multi-threading aspect that

is taught by Bacon? See Applicant's arguments in Amendment-After Non-Final, filed

on Sep 9, 2004, page 7, line 9. The Examiner respectfully notes that Claims 20 and 21 do not recite the multi-threading aspect at all.

Examiner has initiated a telephone interview with Applicant's representative, Robert Voigt, Jr. Reg. No. 47,159, during which Examiner has indicated to Applicant's representative that Claims 1-19 and 22-30 would be allowable and that Claims 20 and 21, in particular, are still considered to be anticipated by Holzle. Examiner further indicated to Applicant's representative, that addition of the feature "just-in-time compiler for compiling object oriented applications for execution" (claimed in instant Claim 19 but not claimed in instant Claims 20 and 21) to instant Claims 20 and 21 would distinguish these instant claims over Holzle because Holzle's teachings are only for an object-oriented SELF programming environment. In response to Examiner's suggestion, Applicant's representative asserted that just-in-time (JIT) is JAVA and JAVA is object-oriented (OO) programming language. Therefore, according to Applicant's representative, adding JIT would not distinguish the instant claims over Holzle. In response, the Examiner has indicated to Applicant's representative in a telephonic message that if applicant's representative asserts that adding JIT would not distinguish Claims 20 and 21 over Holzle then instant Claim 19 would no longer be allowable over Holzle because Applicant's representative infers that Holzle teaches the JIT feature. The Examiner further indicated to applicant's representative that the OO SELF programming environment was known in 1990 (see Holzle, section 3.3, lines 3-4) whereas JAVA was first introduced in 1995. The Examiner further stated that inferring that OO SELF program is the same as JAVA is equivalent to saying that C++ is the same as JAVA because C++ is also an OO programming language, which is fundamentally incorrect.

In view of the foregoing, Claims 1-18 and 26-30 are allowed, Claims 19-25 stand rejected (new grounds of rejection presented herein).

Specification

4.   The specification is objected to because of the following minor informality:

The use of trademarks, such as Java™ or Java® has been noted in this application (e.g., page 3, line 9). Trademarks should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in a any manner which might adversely affect their validity as trademarks.

To expedite correction on this matter, the examiner suggests the following guidelines for Applicant to follow in amending the specification:

i.   Capitalize each letter of a trademark or accompany the trademark with an appropriate designation symbol, e.g., ™ or ®, as appropriate.

ii.   Use each trademark as an adjective modifying a descriptive noun. For example, it would be appropriate to recite "the JAVA platform" or "the JAVA programming language." Note that in these examples, "platform" and "programming language" provide accompanying generic terminology, describing the context in which the trademark is used. By itself, the trademark JAVA specifies only the source of the so-labeled products, namely SUN Microsystems, Inc.

Claim Objection

5.   Claims 19 and 25 are objected to because of the following informalities:

a.   in Claim 19, line 2, the term "sit" should be – site --;

b.   in Claim 25, line 5, delete the conjunctive "and".

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent
> therefor, subject to the conditions and requirements of this title.

7.   Claims 21-25 are rejected under 35 U.S.C. 101 as being directed to nonstatutory

subject matter.

Statutory subject matter requires two things:

(1)   it must be in the "useful arts," U.S. Const., art. I, § 8, cl. 8, which is

equivalent to the modern "industrial" or "technological arts," defined by Congress in

the four categories of "process, machine, manufacture, or composition of matter" in

35 USC § 101; and if it is,

(2)   it must not fall within one of the exceptions for "laws of nature,

physical phenomena and abstract ideas."

Under the most recent Federal Circuit cases, transformation of data by a

machine (e.g., computer) is statutory subject matter provided the claims recite a

"practical application, which produce[s] a useful, concrete and tangible result." State

St. Bank & Trust Co. v. Signature Fin. Group, Inc. 149 F.3d 1368, 1373, 47 USPQ2d

1596, 1600-01 (Fed. Cir. 1998).

In this instance, the language of the claim raises a question as to whether the

claim is directed merely to an abstract idea that is not tied to a technological art,

environment or machine which would result in a practical application producing a

useful, concrete and tangible result to form the basis of statutory subject matter under

35 USC § 101.

Furthermore, the Office's interpretation of this claim is that it does not

expressly or implicitly require performance of any of the steps by a machine such as a

general-purpose digital computer. Structure will not be read into the claims for the

purpose of the statutory subject matter analysis even though the steps might be capable of being performed by a machine.

On this basis, claim 21 is rejected under 35 USC § 101 as being directed to nonstatutory subject matter.

Claims 22-25, which depend from claim 21, are also rejected under 35 USC § 101 for the same reasons.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holzle et al. ("Holzle"), Optimizing Dynamically-Typed Object-Oriented Languages With Polymorphic Inline Caches.

Claim 19

Holzle discloses at least:

a polymorphic inline cache (see at least sections 3.1, 3.2), *said polymorphic inline cache implementing a lockable slot for each individual object type* (see at least sections 3.1, 3.2; note that *lockable slot* is interpreted to mean a memory space in the polymorphic inline cache or PIC that is protected so that any item such as code to display a rectangle would **not be displaced** by code to display a circle and

the *object type* is equivalent to rectangle or circle type) *to a polymorphic call site* (see at least sections 31., 3.2, e.g., first line of section 3.1) *in the application* (see at least sections 3.1, 3.2, e.g., application program to display a rectangle or circle).

Holzle does not specifically disclose:

> *a central processing unit for executing an application;*
>
> *memory connected to the central processing unit via a bus;*
>
> *at least one input/output device connected to the bus and connected to a network interface to an external computer network.*

However, Official notice is taken that the central processing unit (CPU), memory, bus, input/output (I/O) device, network interface and computer network are well known in the art to be hardware components that are used to permit functionality specified in a computer program to be realized.

Holzle does not further disclose:

> *a just-in-time compiler for compiling object oriented applications for execution.*

However, Official notice is taken that JIT compiler is well known in the art to be one of the two components of a Java™ Virtual Machine (the other component being the Interpreter) that is used to translate an instruction set of a JVM to the instruction set of a specific CPU.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a computer system having CPUs, memories, I/O devices, network interface to permit the functionality specified in the object-oriented SELF program as taught by Holzle to be realized. Furthermore, It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of PIC in Holzle to collect type information which may be used by a JIT compiler to produce more efficient code, especially for program written in an OO style

where type analysis often fails to extract useful type information (see Holzle, section 1, Introduction, third paragraph).

Claim 20

Since Claim 20 recites the same limitations of Claim 19 (except the JIT feature), the same rejection is thus applied.

10.   Claim 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lindholm-Yellin, The Java™ Virtual Machine Specification ("JVM Spec"), 20 Sep 1996 in view of Holzle et al. ("Holzle"), Optimizing Dynamically-Typed Object-Oriented Languages With Polymorphic Inline Caches.

Claim 21

JVM Spec discloses at least:

calling a first method having a first object type from an executing object oriented program (see at least sections 8.12 and 8.13);

locking a first slot of a main memory *with a call to the first method of the first object type* (see at least sections 8.12 and 8.13); and

executing the first slot of the main memory (see at least sections 8.12 and 8.13).

JVM Spec does not specifically disclose *a polymorphic inline cache* (PIC). However, Holzle teaches PIC (see at least sections 1, 2 and 3.1, 3.2) for improving the efficiency of a dynamically-typed OO language like Java™ (see at least Holzle, section 2, lines 1-2). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine Holzle with JVM Spec for the purpose discussed above.

Claim 22

The rejection of Claim 21 is incorporated. Since Claim 22 recites the same features of Claim 21, the same rejection is applied.

Claim 23

Rejections of base Claim 21 and intervening Claim 22 are incorporated. JVM Spec does not specifically disclose *wherein the first slot of the polymorphic inline cache is executed simultaneously with the second slot of the polymorphic inline cache.* However, as shown in sections 8.12 and 8.13 of the JVM Spec, Java™ is a multithreaded language having dedicated instructions such as *lock, unlock, monitorenter, monitorexit* for managing thread synchronization. The feature recited in Claim 23 is thus deemed inherent to the teachings of JVM Spec. Without the thread synchronization management feature of Java™ taught in JVM Spec, multiple threads occupying different slots of a main memory cannot be run simultaneously without crashing the main program, the crashing of the main program being caused by the concurrent access and use of the same portion of memory by two or more threads running at the same time.

Claim 24

Rejections of base Claim 21 and intervening Claim 22 are incorporated. JVM Specification does not specifically disclose *wherein the first method of the first object type is called from a first thread which executes independently from an executing second thread which called the second method of the second object type.* However, as shown in sections 8.12 and 8.13 of the JVM Spec, Java™ is a multithreaded language having dedicated instructions such as *lock, unlock, monitorenter, monitorexit* for

managing thread synchronization. The feature recited in Claim 24 is thus deemed inherent to the teachings of JVM Spec. Without the thread synchronization management feature of Java™ taught in JVM Spec, multiple threads occupying different slots of a main memory cannot be run simultaneously without crashing the main program, the crashing of the main program being caused by the concurrent access and use of the same portion of memory by two or more threads running at the same time.

Allowable Subject Matter

11.   Claim 25 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form that directs the claim to statutory subject matter and includes all of the limitations of the base claim and any intervening claims

12.   Claims 1-18 and 26-30 are allowed.

13.   The prior art of record, i.e., Holzle and JVM Spec, taken individually or in combination, fails to teach or suggest a method and computer system for implementing a polymorphic call site in a computer system executing an object oriented program comprising all the method steps recited in Claim 1 and all the means recited in Claim 26 for implementing such a method, respectively.

Conclusion

14.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15.   Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Hoang-Vu A. Nguyen-Ba whose telephone

number is (571) 272-3701. The Examiner can normally be reached on Tuesday-
Friday, 7:15 – 17:45.

If attempts to reach the Examiner by telephone are unsuccessful, the
Examiner's Supervisor, Tuan Dam can be reached at (571) 272-3695.

The fax phone number for the organization where this application or
proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application
should be directed to the TC 2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the
Patent Application Information Retrieval (PAIR) system. Status information for
published applications may be obtained from either Private PAIR or Public PAIR.
Status information for unpublished applications is available through Private PAIR
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Should you have questions on access to the Private PAIR system, contact the
Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANTONY NGUYEN-BA
PRIMARY EXAMINER

Art Unit 2192

August 3, 2005